JUST PAINT

Published by Golden Artist Colors, Inc. / Issue 16

The Nomenclature of Color

By Sarah Sands

INTRODUCTION

On our Web site, for every color we make, an artist will find a wealth of information running in parallel next to the much more visual presence of a virtual drawdown. If asked what the color looked like, or told to mix a similar hue, most would instinctively go to the image for guidance. However, some might rely on the name of the paint, or what the pigment is. Still others might look it up using the Munsell Notation, or Pantone® Matching System, or even enter the CIE L*a*b* values into Photoshop®. But which of these is the most accurate way to truly pinpoint just what color this color is? What follows is an attempt to answer that question, or at least to challenge and inform it with some additional tools and definitions.

LABELING COLOR

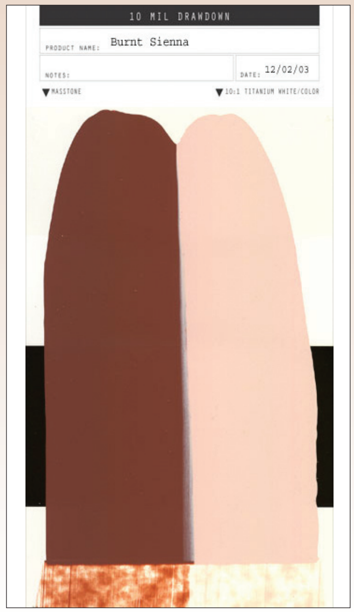
ASTM

While a Rose by any other name might mix as sweetly, if it's actually a Quinacridone Red PV 19 and not labeled as such, it's not in compliance with the American Society for Testing and Materials. Known more commonly by its acronym, ASTM, this is the organization largely responsible for setting the minimum standards for the testing and quality of artists' materials. But their work goes largely unheralded. If artists are aware of them at all it is usually from reading the small print on the back of paint tubes, where the phrase, "Conforms to ASTM D 4236", accompanies disclosure of chronic health hazards, or perhaps from their widely used Lightfastness ratings. Far less known, however, are how the ASTM requirements for labeling artists' paint (D 5098-03) play such a critical piece when we speak about colors. First published in 1984, these standards literally provide the only assurance, outside of Federal and State mandated health warnings, that paints are accurately labeled. Whenever a tube or jar of paint does not clearly state it is in conformance with these guidelines, the artists can be left largely in the dark about what they are buying. Unfortunately, only a few companies outside of GOLDEN have ever followed these standards completely. True, compliance has always been voluntary, but keep in mind these are minimum guidelines and providing artists with accurate and consistent information should be an obvious part of every manufacturer's mission and responsibility.

The standards themselves are fairly straightforward and, beyond issues of placement, cover three major requirements: the label must include the Lightfastness rating for the color, specify each pigment contained in the paint by both its official Common Name and Color Index Generic Name, and the word "Hue" must be included in the name of the paint whenever another pigment is substituted for one normally referenced. As defined in the standards, the term would apply not only to well-known examples such as Cadmium Red Hue, signaling that no actual cadmium pigment is present, but a long list of discontinued, historical colors like Indian Yellow, VanDyke Brown, and Sap Green. Sadly, because the standard is not strictly followed and the word has been used so loosely, "Hue" is often seen as a marker for inexpensive or cheaply made substitutes when often the actual intent is to genuinely provide safer, more permanent, or otherwise unavailable colors.

Color Index

If one is going to speak about color, pigments, and paint, it won't be long before you need to refer to the Color Index. This thick compilation of endless rows of entries is something of a holy grail for anyone wanting to know exactly what constitutes that color lurking in the tube. First published in 1925 by The Society Of Dyers and Colourists of the UK, and currently managed in collaboration with the American Association of Textile Chemists and Colorists, it forms the official index of all commercially available colorants. Each



Burnt Sienna

Pigment Classification: Natural Inorganic
Chemical Description:
Calcinized Natural Iron Oxide
Opacity/Transparency: 2
Lightfastness Rating: I
Permanency: Excellent
Colour Index Name: PBr 7
Colour Index Number: 77491
Munsell Notation Listing:
Hue: 3.0 YR
Value: 3.25
Chroma: 4.0
Pantone Matching System: PMS 175
Spectrophotometer Readings: N/A
Viscosity Range: 20000-23000 CPS
PH Range: 8.3-9.0
Gloss Average: 13.63
CIE L*a*b* Values: L*33.67 a*16.86 b*12.58
Tint Strength: 80.56

pigment any artist might ever use today can be found there, along with those for every other industry. Organized by color, each listing is assigned a C.I. (Color Index) Generic Name, Constitution Number, and a listing of Common Names associated with the dye or pigment. However, by the time all this makes its way to the label, it will usually take on the more cryptic form of a code: PY 43, PB 29, etc.

Deciphering most of the information in a complete listing is actually not difficult, if you know a few basics:

• C.I. Generic Name, which is what you will likely see on a label, always has three components:

- Colorant Type

This is designated by the initial letter. For our purposes the most important for artist paints are solid pigments, designated by a P. Other possibilities, like D (Dye) or S (Solvent Dye), are more common in other industries.

- Hue

There are ten possible categories: R (Red), O (Orange), Y (Yellow), G (Green), B (Blue), V (Violet), Br (Brown), W (White), Bk (Black), M (Metallic)

- Index Number

Pigments are assigned the next available sequential number, within each of the above color categories, at the time they are added. Gaps can occur in the series as pigments become obsolete and are removed over time.

• Constitution Number

Rarely found on labels it is included in more complete listings such as our Pigment ID Chart or the color drawdowns found on our Web site. It is an assigned five-digit number based on the chemical structure of a colorant, when made available by the manufacturer.

• Common Names

A list of the common, generally accepted names for the pigment. This is different than a list of the often proprietary names paint and pigment manufacturers might give.

So, taking for a moment one of our earlier examples, PB 29 would stand for Pigment Blue 29, or the 29th entry for blue pigments. Its Constitution Number, 77007, would refer to its chemical composition as a Polysulfide of Sodium-Alumino-Silicate. Its Common Name would be the familiar Ultramarine Blue.

So how does this help? Where is the path connecting code to color? By far the greatest strength and value of this system is that it provides the artist with an internationally recognized, standardized, and dependable way of knowing precisely which pigments are in a paint. Even if a product uses a familiar color name bearing no relationship to the actual ingredients, and therefore not in compliance with ASTM standards, the Color Index information can hopefully be relied on. Why 'hopefully'? Because even with standards in place, the accuracy of the labels remains very much a matter of trust as the ASTM has no enforcement role. While for some these codes and regulations will appear to wring out any last vestige of poetry from the tubes they buy, it allows the artist to know exactly what they are getting when they get the goods.

Some Limitations

As essential and reliant as the Color Index is, there are also limitations. The Index is certainly useful for cross-referencing which pigments are in a particular tube of paint but by itself this does not necessarily tell an artist what the actual hue of the color will be. The reason for this is that a wide range of shades and qualities in a pigment can still share the same Color Index Name. Asking a pigment supplier for Ultramarine Blue can easily mean picking through 15 different shades or more, with a surprisingly wide variance, but in the end all authentically PB 29. Cadmiums are equally notorious. PR 108 could indicate a very warm Cadmium Red Light or a much cooler and deeper Cadmium Red Deep. PY 35 is equally Cadmium Yellow Primrose and Cadmium Yellow Deep – extremely different colors with identical Color Index Names and even Constitution Numbers. Both synthetic and natural iron oxides have surprisingly wide gamuts as well. PR 101, indicating a synthetic iron oxide, belongs to both the dense and opaque Violet Oxide and the very translucent Transparent Red Iron Oxide, while PBr 7, a natural oxide, covers anything from Raw Umber to Burnt Sienna. And the more modern organic pigments don't escape easily either. PV 19 indicates both Quinacridone Violet and Quinacridone Red. To further complicate things, a single Common Name can belong to different pigments. For example, 'Raw Sienna' can be used with either PY 43 or PBr 7, and these happen to also share the same Constitution number since their underlying chemistries are essentially the same, the difference in hue coming from different levels of calcination or specific minerals. But don't despair – the color equivalent of the cavalry is about to arrive.

COLORIMETRY AND THE MEASURE OF COLOR

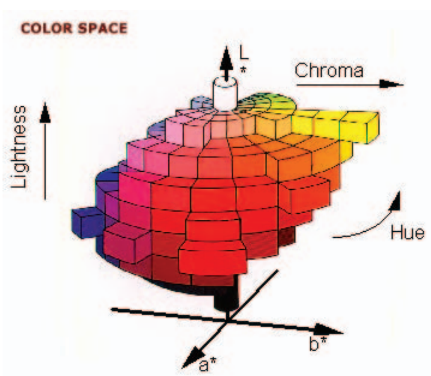
Because the Color Index's primary focus and purpose is the cataloging of commercially available pigments, it does not provide the tools needed to really classify color in a very precise way. Needing a methodology that could do that, both industry and science have had to turn to various models of color space and methods of analysis drawn from Colorimetry, the field concerned with the quantitative measurement of color in general. Ultimately these technologies and systems have provided a neutral, objective language for people to accurately record, compare, and communicate the exact hue of any perceivable color. In the sections that follow we will describe the two models most widely used for these purposes, CIE Lab and Munsell, and go on to examine alternate systems such as the CMYK and RGB, which are widely used in the print and display industries respectively.

CIE LAB

In 1976 the Commission Internationale d'Eclairage (CIE), an organization that writes the official standards for the scientific measurement of color, developed a color model known as CIE Lab (or, to be very precise, CIE 1976 L*a*b*). Its goal was to create a system for describing all perceptible colors in a manner that was both uniform and device independent. By 'uniform' is meant that equally measured distances in the color space ideally equate to equally perceived color differences as seen by a standard observer. The standard observer is a construct the CIE created from extensive research on what a person with normal sight might perceive. 'Device independent' refers to a color space independent of the limitations inherent in a specific media or device, such as a particular printer or monitor. Because CIE Lab is free from these restrictions it can represent colors as perceived by the human eye and act as an almost universal translator between the different color spaces native to those various devices. Consequently, as a result of these strengths, CIE Lab has become the most widely used and authoritative standard for all color management systems and wherever information needs to be calculated and communicated in a device-independent form. CIE Lab is also central to the formulas used to determine ASTM Lightfastness ratings and in GOLDEN's own operations for color matching, color analysis, and to assure batch-to-batch consistency of both raw pigments as well as finished paint.

Conceptually the actual CIE Lab space is fairly easy to understand. As with all three-dimensional models, any point can be defined in terms of three coordinates plotted along their corresponding axis. The variables CIE Lab uses for locating each color are:
L*: lightness or value. The scale runs from 0 (Black) to 100 (White).
a*: red-green component. Negative number is greener, positive is redder.
b*: blue-yellow component. Negative number is bluer, positive more yellow.

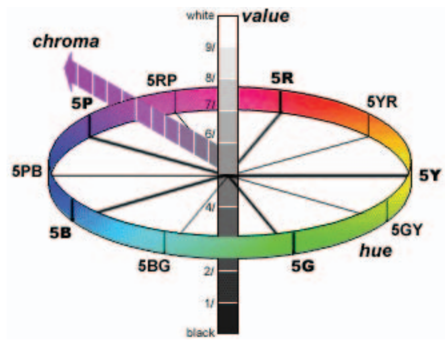
These measurements are taken with a precisely calibrated spectrophotometer using standards set by the CIE. As an example, here is one typical reading taken from a GOLDEN Heavy Body Acrylic:
CIE L*a*b* Values: L*78.51, a*18.46, b*89.29



By simply looking at the numbers it would be difficult to divine exactly what the color is. The high L* speaks to the color being fairly light in value, while a* shows a slight degree of reddishness and b* a very strong yellow component. If a person went on to imagine it was a very bright, slightly warm yellow, they would be essentially correct. Even more importantly, give these numbers to anyone in the world with the appropriate software and tools, and they should be able to recreate, fairly accurately, the color for Hansa Yellow Medium. It is perhaps not the most lyrical way to communicate a color more associated with sunlight and lemons, but what it might lose in poetry it certainly gains in precision.

Munsell

Along with CIE Lab, the Munsell color system is perhaps the most widely disseminated and utilized in the world. Originally created by the American artist and educator, Albert H. Munsell, in 1905, it was certainly not the first attempt to arrange colors into a logical order but it has been the most successful at establishing a system for designating surface colors within a systematic space. He based his system around three attributes: Hue, or the quality that separates one color from another; Chroma, a concept similar to Saturation; and Value, or how light or dark a color was. These were then organized into an irregular three-dimensional model he termed a 'color tree' with a central value scale running from black through nine achromatic grays to white in the center, creating a vertical 'trunk' of perceptually equal steps in value. Around this core were arrayed five basic color groupings spaced at equal intervals: Red, Yellow, Green, Blue, and Purple, further divided by the five admixtures between them. Chroma was measured along a scale of likewise perceptually equal steps running from a particular color's most saturated state to the corresponding grey of the same value.



Albert Henry Munsell, *A Color Notation*, 1905

The feature of consistently organizing the three major aspects of color into perceptually equal divisions in all directions was one of the most significant and recognizable features of Munsell's model and profoundly impacted nearly every major system that followed. (Landa, Fairchild, 2003) By further subdividing these main divisions into ever-smaller intervals, any color within the space could be easily designated by its Hue, Value and Chroma. As an example, the specification for our earlier example of GOLDEN Hansa Yellow Medium: Hue 2.0Y, Value 7.75, Chroma 16.8 can also be written in the form H V/C, known as Munsell Notation: 2Y 7.75/16.8.

It is important to note that Munsell values are commonly determined by directly comparing a given color swatch to pre-made color chips organized into an atlas. This is a very different approach than the spectrophotometer readings CIE Lab relies on exclusively. Even if a great deal of care is taken to examine the colors against a neutral background, and under controlled lighting conditions, there are built-in limitations with this kind of system. A certain amount of subjective judgment and interpretation are inevitable whenever human perception is involved, so different operators can easily come to different conclusions. The Munsell system is also bound by the limited gamut of the colors used to generate the chips, rather than the range of human perception. And of course, the swatches need to be repeatedly and accurately manufactured to a tight standard, can degrade over time, and each person using this system must have a copy of the color atlas as a reference. But all that aside, it still remains one of the easiest models to grasp and, within its limits, is a valuable tool for anyone wanting a fairly accurate, flexible, and intuitive tool for assessing colors.

OTHER COLOR MODELS

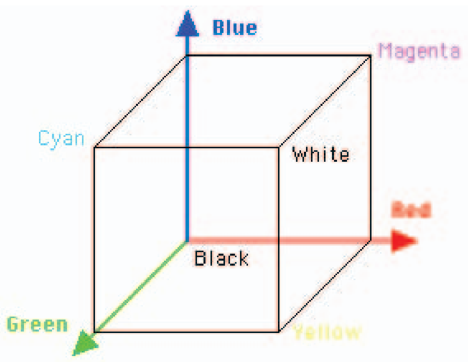
Device Dependent – RGB and CMYK

While CIE Lab and Munsell are wonderful examples of global order and comprehensible structure, one doesn't have to stray very far before bumping up against the far more unruly world of computer screens and printed pages. Monitors, televisions, printers, scanners, digital cameras, and even cell phones, all come with some form of native color space. Likewise, most of us have experienced the sometimes dramatic and unpredictable changes in color when the same image is printed on different devices or viewed on different screens. Each device seems to come with its own specs, its own way of interpreting the same color data, and its own particular limitations. Each manufacturer, we come to realize, sees color a little differently.

For the most part, all of these devices work with some variation of RGB or CMYK color models, which operate very differently from the CIE Lab and Munsell systems we first introduced. In those, a set of well-defined variables delineated a specific unique color. By contrast, RGB and CMYK values describe ratios between generalized inputs: additive primaries of light, in the case of RGB, or subtractive primaries for inks in CMYK. It's as if, rather than designating a color, they provide something more akin to a recipe for mixing it. Since each device can only interpret those values based on its own parameters, the systems have eventually become known as 'device-dependent.' (Fraser, 1995)

RGB

RGB, which stands for Red Green Blue, is the color space most commonly encountered on display screens, such as computer monitors and televisions, and describes color in terms of differing amounts of red,



green or blue light. Geometrically it is often depicted as a cube with Red Green and Blue occupying three vertices, white, black, and the secondary mixtures occupying the others. Each position within the space is defined by three values, often expressed by a range from 0-255, that represent the relative amount of the three primaries. For example, the purest red that can be specified in this system would be written: R:255 G:0 B:0 However, just having a set of RGB values will not tell someone which color they would see. For that, a person would need to know which particular version of the RGB system the values belong to and then display them on a screen calibrated to that specific space as well. Even in the example of a pure red, where it will always produce the most saturated red any particular device can deliver, the question remains – what red is that? Depending on whether it is a cell phone, HDTV, LCD Monitor, or a CRT, and adding in all the other variables one can imagine, there is simply no way to truly know.

CMYK

Widely known by anyone involved in graphics or printing, some version of this color space is used in nearly every color printing process – from the fanciest reproductions to the lowliest inkjets. In its most common form the system relies on Cyan, Magenta, Yellow and Black printing inks to achieve its range of colors. CMYK values are stated as percentages that give the degree of density for each ink. A color similar to Burnt Sienna, for example, could be written as: C25, M70, Y90, K35. However, just as we saw with RGB, these values only represent amounts of generalized colorants and do not describe a particular hue within an unvarying color space. In fact, in this aspect, CMYK can be even more fraught with uncertainty than RGB. The type of printer, which ink system is used, the substrate, and even the environmental conditions, all impact the ability of this model to reliably reproduce a specific color. Even the nature of the inputting device will have its effect on the outcome. Lastly, by being restricted to a relatively small set of inks, CMYK has by far the most limited gamut within the color models we have examined. Even when the number of inks are expanded, as in many of the current systems using six and eight colors, it still falls short of what can be expressed elsewhere.

NAMED COLOR SPACES

There is any number of proprietary systems, sometimes referred to as 'named color spaces,' which are not actually color models in any true sense of the word. None of them attempt to generate a complete, general color space, rendering them ineffective for measuring or translating colors outside of their fixed systems. Rather, they are simply large compilations of precisely colored chips organized into numerous swatch books. They serve as a form of visual shorthand, a way for designers, graphic artists, and other professionals to quickly reference and specify pre-made standardized collections of solid colors. (Apple, 2005)

Although these systems might not be particularly useful for creating complex images they do allow for a tremendous amount of control since their formulations are specifically tied to a particular company's ink system and even the type of paper stock and coatings that are used. By controlling the process to this degree of detail, they avoid the inherent problems we saw earlier with CMYK, where parameters were left open and variable.

Pantone®

Pantone is by far the most widely known name in this field and its Pantone Matching System (PMS) is its exclusive set of over a thousand standardized, precisely printed colors. The entire system is available on coated, uncoated, and matte card stock, along with the corresponding specialized ink formulations to allow printers to accurately reproduce them. These color guides have become internationally recognized as a standard reference and theoretically anyone, anywhere, can reproduce each color by looking it up in the corresponding Pantone book and mixing a set of proprietary inks in the given ratios.

From time to time GOLDEN gets a request to match a specific Pantone number, which our Custom Lab is happy to do. You can also find the PMS designation corresponding to each of our colors by going to any of the virtual colorcharts on our Web site and clicking on a desired swatch. The large drawdown you will then see lists the Pantone Matching System value, such as 'PMS 123', which aligns with our Hansa Yellow Medium.

OTHER TERMS IN COLOR LANGUAGE

Beyond these broad systems of classification are a host of other terms artists frequently use that are worth noting:

Organic / Inorganic

While these categories refer specifically to the chemistry of a pigment and not its color, artists will sometimes use this distinction when selecting which ones to buy. The organic pigments are synthetically produced from petroleum and natural gas and derive their name from the fact they are based on carbon-compounds, which is the defining characteristic of organic chemistry in general. By comparison the inorganics are generally composed of crystals of metal oxides, and while many are mined, they can just as likely be synthetically manufactured; Ultramarine Blue and the synthetic iron oxides being two such examples.

This last point is important because a common misperception is that the terms Organic / Inorganic also describe a division between synthetic, engineered pigments and more basic ones derived from natural sources. The truth is, the vast majority of pigments – even native earth colors – have been highly processed through large-scale industrial plants by the time they arrive to a manufacturer's doorstep.

Transparent / Opaque

Currently there are no standards for measuring transparency or opacity and most ratings, including ours, are made through examining similarly prepared samples and rating them relative to one another. The difficulty here is that many pigments that are inherently transparent will seem quite strong and opaque if used full-strength from the tube, especially when made with a high pigment load. Phthalo Blue is an excellent example of this. In a 10 ml drawdown it was ranked on par with more commonly opaque colors such as Cobalt Blue, Pyrrole Red, and Cadmium Orange. However, when applied very thinly, mixed with a gel, or extended with a medium, Phthalo Blue shows another side and becomes a transparent and beautiful glazing color.

Masstone / Undertone

The masstone of a paint is simply its color when applied thickly enough to completely cover a surface. No other colors from below show through. Undertone, by contrast, is visible when we spread the color very thinly over a white surface. Certain colors, such as the Cadmiums and Cobalts, have similar masstones and undertones. With the transparent organic colors like the Quinacridones or Phthalos, the undertone can be quite different from what might be expected.

Tint Strength

This is the ability of a color to change the character of another color. We determine this by adding the same amount of Titanium White to each color and observing the resulting strength of the color mixture. Weaker tinting colors create light pastel mixtures. Stronger tinting colors create darker mixtures.

Other Resources:

The essential literature on color theories, nomenclature, and models is too vast to list here. A complete listing of books, Web sites, and other resources referenced in this article will be made available at www.goldenpaints.com/justpaint/jpindex.php.

In addition, a few years ago GOLDEN was proud to be the force behind the publication of two books on color theory and traditions. These continue to be available from us and provide a wonderful place to start if you are interested in an approachable survey and introduction into the rich history of these fields.

GOLDEN

Working Artists℠

10 Years of Sharing

By Jodi O'Dell

Professional Artist and Working Artists Program Director Patti Brady has played an intregal role in the Program since its inception in 1997.

The GOLDEN Working Artists℠ Program has been providing a venue for artist experimentation for the last 10 years. Many people learn best by experiencing materials first-hand and the Program does just that – provides an opportunity for playful exploration and sharing of technical information about the variety of GOLDEN products and their uses.

The curriculum that was established for the current Working Artists Program classes resulted from work done by GOLDEN CEO Mark Golden, Artist Scott Bennett and Artist Jim Walsh several years prior to the implementation of the formal Working Artists Program. It was the success of these hands-on workshops that led to the need for additional artists and resources.

"We're very excited to be celebrating our 10 year anniversary," said South Carolina Artist and Working Artists Program Director, Patti Brady. "The success and growth the Program has seen in the last 10 years has been incredible. The knowledge artists have gained by participating in the Program's classes is indescribable. Artists are tremendously grateful for our time spent with them and it feels great to be part of a sustainable Program such as this."

The Program has grown tremendously since its beginning in 1997, when it comprised two independent contractors in the United States. The Program currently has 27 artists in key locations throughout the US and Canada as well as nine artists positioned internationally. There are a handful of artists who have been in the Program since the beginning and have seen tremendous results both personally and professionally.

"When I take a look at the progress I have made over the years I am amazed," said New Mexico Artist, Nancy Reyner. "I see leaps and bounds in both technical skill and confidence in areas such as painting, teaching, and my overall artistic experience. I feel as though I went through a high level postgraduate program. In addition to the advancement of my work as a painter, I have gained confidence as a public speaker, and am really enjoying my time 'on stage' demonstrating. I love watching faces light up as I get to show all the new products and techniques to other artists. It is wonderful to share this information and my discoveries with other artists."

California Working Artist, Tesia Blackburn, agrees. "I've increased my teaching 'audience' by more than tenfold since I began with the Program. I am very grateful to GOLDEN for the opportunity to be a part of the Working Artists Program!"

Corrine Loomis Dietz, an artist in Oregon, reinforces the importance the Program has served in her own artwork. "In my own work, as I experiment with my photographs and paint, I am building stronger surfaces with a new sense of articulation. Layers of exploration, building color, textures, surfaces that change in absorbency, combining pencil and paint ... somehow I have the confidence to pull it together. I know this is due to being so heavily exposed to the product, the technical dialogue, and being required to verbalize it to other artists. I have learned so much; I still have so much to learn!"

"What a journey it has been over the last ten years!" said Brady. "In the early stages of the Program I was so lucky to work with artists with an insatiable lust for technical information and for crazy experimentation – the craving for knowledge was contagious and shared with each other. I can't say enough about how every one of the artists in the Program have in their own way supported me in my career as a painter, or how the exploration of product has profoundly influenced and supported my work. None of this could have happened without the support of the company and Mark Golden's commitment to education and to individual artists."

The Working Artists are professionals whose credentials range from Masters of Fine Arts to Masters in Education. The majority of artists maintain a rigorous studio practice while continuing to exhibit in national, international, group and solo shows.

Working Artists receive extensive training to expand their knowledge of products and painting techniques. Each artist then provides informative lectures, conducts interactive classes and gives hands-on demonstrations displaying many different aspects of

Working Artists Program Retailer Workshops provide staff with invaluable product information about modern materials, which they can then share with their customers.

GOLDEN Acrylics. Individual classes target specific interests and techniques, including Essential Acrylic Techniques, Mixed Media Techniques, Watermedia Techniques with Fluids, Ground and Gels, Color Mixing with Acrylics, Outdoor Acrylic Painting Techniques, Gels and Mediums: The Secret to Acrylic Painting, and more. Presentations given by the Working Artists span all levels of ability, include information for various audience interests and take place in a variety of settings.

It is this one-on-one interaction in the class that has made the Program so strong. Relationships that have been established between artists through the Working Artists Program have been incredible. One Working Artist has even credited a portion of her artwork's success to the Program and the community she's been able to connect with through the classes she teaches.

"A supportive arts community has developed through this work, which includes the GOLDEN technical staff, other working artists, the arts organizations where I teach and of course, my students," said Reyner. "I feel like this opportunity is truly a gift, and I put it on the same level as my undergrad and graduate degree programs."

Ties to the arts community have also strengthened for Artist Tesia Blackburn since she began with the Program. "The Working Artists Program has been responsible for introducing me to a large number of artists and students," said Blackburn. "It has helped immensely in filling my classes and workshops. There are waiting lists for all of my classes!"

The GOLDEN Working Artists are the eyes and ears of the company. They validate our business model. They allow us to play a significant part within the artist community. They help us to communicate with one artist at a time. We believe that if you want to create community, you need people who are part of the community to do it. "The artists involved in this Program are excited about what they do each and every day for fellow artists," said Patti Brady. "They are committed to sharing real information in a very real way."

"Teaching the workshops has allowed me to meet a wide range of people around the region, which has resulted in long lasting relationships and sharing of ideas and artwork," said Minnesota Artist, Bonnie Cutts. "I enjoy seeing how others think visually and how they make use of the materials. I always learn something from participants. It is so rewarding to see them leave a lecture or workshop with so much more information than before the session and be excited about what they can try with their own work."

Support of our Retailer community is also an essential part of the Working Artists Program. The Retailer Workshop

Continued on page 11

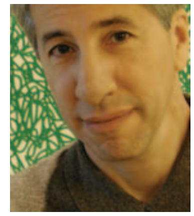
The Art Materials Information and Education Network

Artists now have access to a centralized repository of information to assist them in making intelligent choices about the materials they use. This newly created resource is *The Art Materials Information and Education Network* (AMIEN). Its mission is to provide comprehensive, up-to-date, accurate and impartial information about artists' materials to artists, art historians, conservators, educators, organizations interested in the subject, and the general public. Two areas of focus are to provide these groups with access to regular educational programs in materials education and conduct materials research.

AMIEN is freely accessible via e-mail, telephone, ordinary mail, fax, and through its stand-alone Web site. The Web site, which launched in December 2006, hosts a forum for discussion and publishes papers of interest to its constituents. In addition, AMIEN plans to publish short articles and pamphlets in printed formats for distribution to its clients. All Internet services are free, while other services have a nominal fee to cover costs.

AMIEN is co-directed by Albert Albano, Executive Director of The Intermuseum Conservation Association (ICA) and Mark Gottsegen, artist, educator and author. Albano and Gottsegen have had extensive experience in art conservation, materials education, and interactive assistance for artists. Their spheres of interaction and communication encompass the entire art world of artists, conservators, art historians, conservation scientists, and the manufacturers of art materials.

Albano has worked, lectured, and published in the field of art conservation



and preservation since 1976 as a conservation apprentice to Orin Riley, paintings conservator at the Solomon R. Guggenheim Museum, New York, NY; graduate of the Cooperstown Graduate Conservation Program; Associate Conservator at the Philadelphia Museum of Art, PA; Senior Conservator at the Museum of Modern Art, New York, NY; and Director of Conservation at Winterthur Museum and Garden, DE.

Gottsegen is a graduate of The University of Rochester and Boston

University, where he studied with Philip Guston and James Weeks. Mark has been a drawing and painting teacher since 1976 at the University of North Carolina at Greensboro, and a writer and researcher about art materials since 1975 [*The Painter's Handbook* (revised, expanded, and illustrated), 2nd Edition, Watson-Guptill Publications, 2006, is the latest edition]. He has been a member of ASTM D01.57 on Artists' Paints and Related Materials (ASTM International) since 1978 and Chairman since 1994, has given numerous public talks regarding art materials since 1980, and has participated in symposia and on panels across the US and in Europe.

AMIEN will continue research programs begun by Gottsegen in 1978 in partnership with ASTM International (the American Society for Testing Materials), state and federal government agencies/groups, and private foundations, as well as initiate new research.

The creation of this resource was inspired by the Co-Directors' observations of the current state of materials information access. Art materials education, once a vital part of a young artist's training, has been severely curtailed. New materials used for the creation of artwork are being introduced at a rapid rate. In addition, artists are constantly choosing new materials outside the traditional range of art materials and have limited resources for understanding their properties. Until the late 1990s, most information about art materials was found in books, which

Continued on the back page

AMIEN: Supporting the Artist Community:

A new valuable resource

At Golden Artist Colors we have always prided ourselves for the level of information and discourse we have made available to professional artists. We continue to look for ways to be an even more meaningful resource to the arts community. We are delighted to share with you that we have become a founding sponsor of the newly formed and fully independent *Art Materials Information and Education Network* (AMIEN), operated under the auspices of The Intermuseum Conservation Association and Co-Directed by Albert Albano and Mark Gottsegen.

We hope that our seed sponsorship will assist AMIEN in obtaining other sponsorships from the entire artist material trade that supply tools for the fine arts community. We are also hopeful that artists themselves will support this effort to assure the impartiality and the continued outreach of this new organization.

AMIEN will provide an independent voice to reduce the din of bad information and bad practice that proliferate in this modern era.

GOLDEN's support of AMIEN will in no way lessen our commitment to our own research. We will continue to work within our own Lab and with other researchers around the world, for ways to continue to develop and improve our understanding of modern synthetic coatings, especially acrylics. It is hoped that our collaborative research will continue to be a valuable resource for AMIEN and other groups committed to the investigation of modern materials. We truly love the process of invention and discovery here and believe our support for AMIEN will only increase the value and support we can offer the arts community.

To support AMIEN's work, please visit the Web site at www.amien.org and join the other voices that believe that we will all benefit from an independent and professional organization providing the most up to date and unbiased information about the tools of fine art. Please note that AMIEN has a Donations page: Supporting AMIEN not only supports the professional artist, but all levels of fine artists and collectors who care about the performance, durability and proper care of their work.

Mark Golden

Natural Earth Colors

By Ulysses Jackson and Jim Hayes

Iron oxide pigments come from a variety of sources, both naturally occurring and man-made. The beauty of synthetic manufacturing is the ability to make very bright, strong tint, opaque and consistent earth tone colors. What may be lost with these man-made pigments is the ability to create translucent and softer effects.

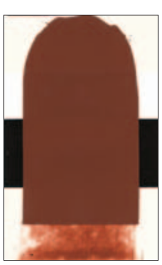
This is where naturally occurring iron oxide pigments have value; as they are inherently more translucent yet offer some warm, rich qualities. The very quality of being naturally occurring means these pigments are variable in composition and physical properties, which can result in color variance from one pigment lot to the next. While this natural modulation is of great allure to artists, natural variability can cause paint makers some concern. Golden Artist Colors works hard to maintain tight tolerances on all of its products, yet the very nature of these pigments creates a need for some reasonable tolerance to variation.

That said, oil painters have access to a wide range of Natural Earth Colors. Yet, until this range of Natural Earth Colors, the acrylic artist has been limited to the standard iron/ferric oxide pigments. GOLDEN is proud to be on the forefront of Acrylic research in making available a massive resource of tone to the artist community. GOLDEN Natural Earth Colors allows for a rich impasto effect in a flexible film, and blends of these colors allow for an almost infinite variation of subtleties to render the natural world.

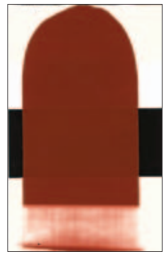
GOLDEN Natural Earth Colors are so diverse in tone and subtleties it would take a substantial article to describe each color fully. Thus, for the sake of brevity GOLDEN Natural Earth Colors can be placed into the following color groups. Under each heading below is a simplified description of each color's space.

RED EARTHS

■ Natural Red Iron Oxide, PR 102, is a ferric oxide, which has a color somewhere between Red Oxide and Violet Oxide but trending on the redder side, with a bright earthy pink tint.

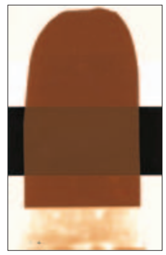


■ Natural Venetian Red, PR 102, is a ferric oxide with more transparent characteristics than GOLDEN Red Oxide. Its color is lower in chroma than a synthetic, but still retains a lush red tone.

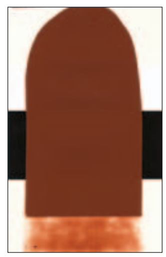


ORANGE EARTHS

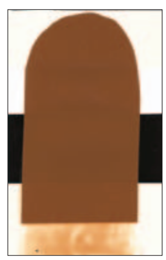
■ Orange Ochre, PY 43, is a hydrated Iron Oxide that is clean in tone for an earth color. The color can be described as a transparent bright rich orange with a slightly brown-yellow undertone, which tints peach to red-orange.



■ Red Ochre, PR 102, is a ferric oxide pigment that is a lighter, opaque red ochre. It fills the color space between Burnt Sienna and Mars Yellow and tints to a light pink tone.

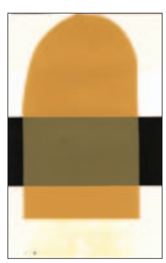


■ Ochre Havane, PY 43, is a hydrated ferric oxide that is beautifully translucent and tints whites a light orange. It fills a color space between two synthetic pigments: Transparent Yellow Iron Oxide and Mars Yellow.

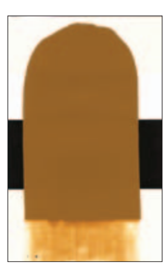


YELLOW EARTHS

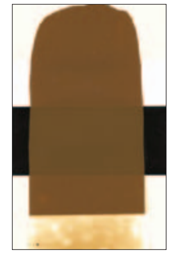
■ Natural Yellow Iron Oxide is a bright transparent earth yellow with an amazing "amber" luminosity.



■ Yellow Ochre (Red Shade), PY 43, is very similar to Yellow Ochre with a gentle red shade in its masstone. It has a tint with pink-peach qualities.

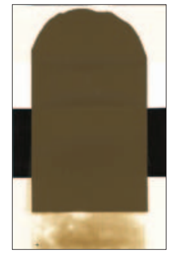


■ French Raw Sienna, PBr 7, is a very interesting ferric oxide that is much more orange and translucent than Transparent Yellow Iron Oxide.

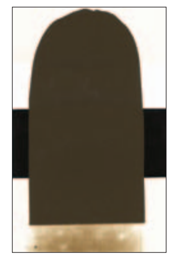


OLIVE EARTHS

■ Raw Umber Olive Light, PBr 7, is a ferric oxide with an amazing olive earth yellow-green tone, almost as if Nickel Azo Yellow, Yellow Oxide and Burnt Sienna were mixed together. This color creates tints of a yellow grey quality and fills a new color space.

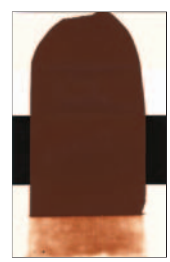


■ Raw Umber Olive, PBr 7, is a ferric oxide with a higher chroma yellow-green Raw Umber. Its tint strength is slightly weaker than Raw Umber, but creates tints of a pure yellow grey tone.

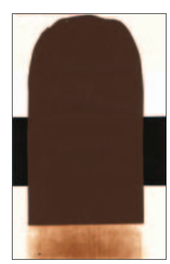


BROWN EARTHS

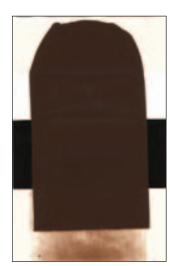
■ French Burnt Sienna, PBr 7, is a ferric oxide that is a more translucent version of Burnt Sienna.



■ Raw Umber Cyprus, PBr 7, is a ferric oxide that fills the color space between Burnt Sienna and Burnt Umber Light. This versatile brown creates tints that are orange-pink in nature.



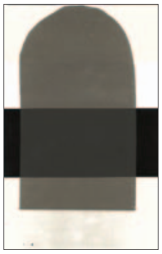
■ French Burnt Umber, PBr 7, is a ferric oxide, which manifests a lighter purple biased version of Burnt Umber. It tints similar to a weak Violet Oxide.



■ Raw Umber Chestnut, PBr 7, is a ferric oxide that fills the color space between Burnt Umber Light and Raw Umber. It is a light, rich color with a tint closer to Burnt Umber Light.

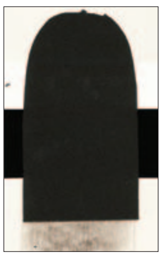
GREY EARTH

■ Ardoise Gray is transparent grey slate with a mild blue undertone. It can be useful in grey glazes bringing greater depth to shadows.



BLACK EARTH

■ Cassel Earth is a warm black with orange-red undertones. It tints with a red-purple quality. The overall aesthetic is one of a genuine Asphaltum, but in a lightfast earth color.



Custom Lab Launches New Experimental Products

By Scott Bennett

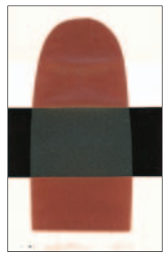
COLOR TRAVEL INTERFERENCE COLORS

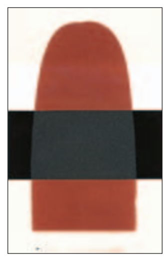
No, this is not a misprint. The product category is actually called Color Travel Interference Colors. This means that as the viewing angle changes, the colors shift dramatically. Similar to the Interference Oxides, they use oxide-coated micas. The unifying color effect among the Interference Oxides and these new Color Travel Interference Colors is the translucent red oxide-like undertone, All are being made in Fluid Acrylic viscosity, and have a somewhat more opaque appearance than most other interference type paints.

The full color travel effects are best seen with films thick enough to be opaque, or with thin films over a black ground, or with multiple viewing angles. In both cases, curved, wavy or rippled surfaces will enhance the simultaneous spectrum of colors exhibited. At optimum light reflectance angles, even thin translucent films can appear almost opaque, in all but the Cyan/Violet and Teal/Violet, which seem to require a dark ground to show their colors most intensely. At certain angles the mica particles will appear sparkly and add a spatial quality to the overall effect, with a slight tilt in the angle giving a flatter and less iridescent looking color.

The six colors have been divided into three groups with similar characteristics.

TEAL/VIOLET AND CYAN/VIOLET

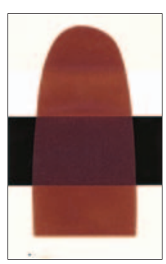


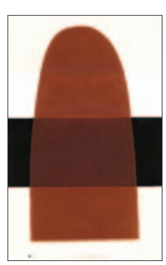


These colors are the most striking in terms of color "flip" because they come close to having complementary color travel, with more than two iridescent colors visible in the transition. It is possible to see violet, blue and green at different angles and all three colors simultaneously on curved surfaces, although the Teal/Violet and Cyan/Violet duos predominate in most situations. Over white, in thin applications, the reddish brown undertone is most obvious, with the Teal and Cyan colors showing themselves as highly variable iridescent blues and greens.

As with many of these oxide-type interference colors, it can, initially, have a general copper-bronze-like appearance. These two Color Travel Interference Colors are very spectacular on rough, textured, or curved dark surfaces in bright balanced light.

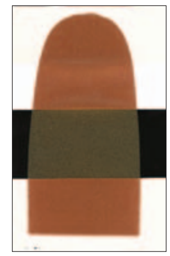
MAGENTA/COPPER AND RED/COPPER LIGHT

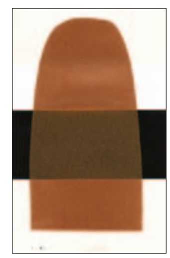




Viewed in full, unfiltered sunlight these colors appear as a hot iridescent magenta pink, and a bright warm pink, respectively, gradually changing to coppery orange and yellow iridescent colors as you change the viewing angle. The red can appear closer to orange in sunlight, and become more pink-like under general incandescent indoor lighting. The Copper Light can look like Diarylide Yellow in strong sunlight. The magenta will be cooler or warmer depending on the quality of light, and the copper component can be anywhere between bright yellow/orange to reddish iridescent copper. The striking color flip from hot magenta pink to bright copper separates the Magenta/Copper from the Interference Oxide Red, which has a somewhat similar pinkish iridescent color. At the most oblique angle, both appear as an almost identical brownish orange color.

OLIVE/GOLD AND YELLOW/GOLD



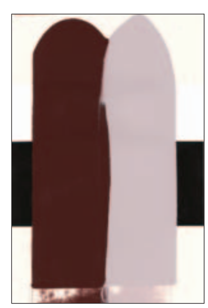


Over dark grounds this color appears as an iridescent gold and green, and on rippled and curved surfaces or with a full range of viewing angles, the color travel goes from gold to blue to green, with slight amounts of violet. All these colors may not be seen with the paint on a flat surface, or in ambient indoor light. The iridescent green in this color is similar to Interference Oxide Green (Yellow Shade).

Another name for the Yellow/Gold could have been Yellow/Orange, which also somewhat accurately describes the color travel. The yellow may not be seen at all with some indoor lighting, appearing as either a yellow gold or orange copper iridescent color, but in full sunlight, or full spectrum indoor lighting, there can be a striking bright yellow color visible, which can have a greenish look over black, due to optical color blending.

FLUID COLORS

FLUID VIOLET OXIDE DARK



This new oxide color is a darker and cooler version of our existing Violet Oxide. While both the undertone and masstone of the Violet Oxide is reddish, the Violet Oxide Dark leans to the blue in both areas, and compared to the Violet Oxide is much more neutral. Both colors make beautiful tints that could be very useful in portrait and figure painting, or anytime a grayed purple-red color is desired.

GROUNDS

TRANSLUCENT GROUND (FINE)

TRANSLUCENT GROUND (COARSE)

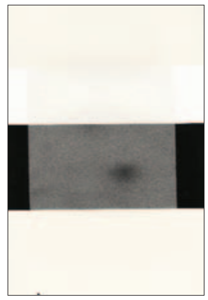
These two new grounds are wonderful additions to our selection, and significantly extend the variety of surfaces for soft drawing media, while adding the unique characteristic of a high level of translucency, typically not found with this type of textured surface. Translucent Ground (Fine) is slightly smoother than the Acrylic Ground for Pastels, while Translucent Ground (Coarse) has more "tooth," and together they effectively create a family of products with a tightly graded range of surface textures.

Both Grounds grab on to pencil and pastel very well and with a typical #2 HB pencil, it is a little bit easier to get a darker valued mark on both, as compared to our Acrylic Ground for Pastels. In part, this has to do with the translucency of these new grounds allowing for more contrast, but also because of the nature of the solids used to create the subtle textures. Over white grounds, compared side by side, the Acrylic Ground for Pastels is much more opaque with a warm milky gray color, while both of the new grounds allow much of the white to show through, with only a slightly darker, subtle grayish color showing. On a dark or black ground, the Acrylic Ground for Pastels significantly lightens the surface because of its opacity, but both of the new grounds do the opposite: they darken because of their translucency and semi-gloss nature. The one characteristic that may be surprising is that both these grounds are semi-gloss rather than matte. Even with this semi-gloss surface, both grounds take stains and washes fairly well, showing a good level of absorbency.

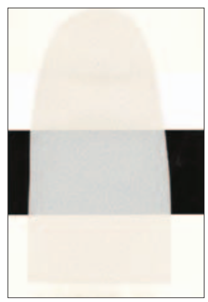
WORKABLE MEDIUMS

WORKABLE MEDIUM

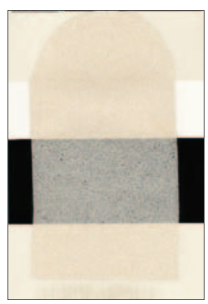
WORKABLE MEDIUM (LONG OPEN)



WORKABLE IRIDESCENT MEDIUM



WORKABLE IRIDESCENT MEDIUM (LONG OPEN)



These products were birthed from a particularly creative and flexible collaborative effort between the GOLDEN Lab, Marketing Team, and Technical Consulting Team. The extended open time, re-solubility, dry film properties, and the resulting subtractive techniques made possible, are the stand out attributes of these products. There is great potential for layering multiple coats of these mediums mixed with paint, and using various subtractive techniques, both wet and dry, to achieve unique color and surface effects. All are absorbent enough to take stains and washes nicely with varying effects, and most have enough tooth to grab onto soft drawing media with satisfying results. Any of them could be used as wet or dry grounds, but since the "Long Open" ones have the capacity to remain wet for extended periods, their use in Plein-Aire Painting, or for any extended paint handling techniques is ideal.

While it is the "workable" properties that are being focused on with these new materials, we fully expect to hear of many other uses and techniques as artists begin to work with these new products. An important reminder is that these are experimental products, and have not been fully tested. For instance, all of the products exhibit a somewhat delicate dry film integrity and it may be necessary to topcoat them for better physical protection.

We settled on four separate products, two that are iridescent and two that are not, with each group having both a long and short open time.

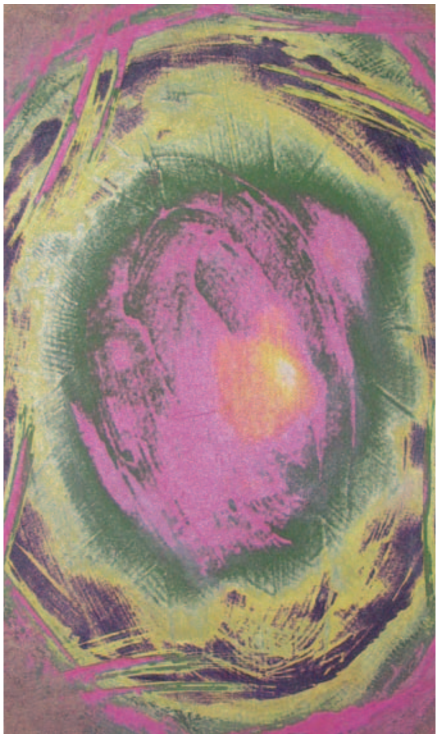
PRODUCT DESCRIPTIONS

The two Workable Iridescent Mediums are the most opaque of the four, although still have a level of translucency, seen in 10 ml drawdowns. The Workable Iridescent Medium has a very beautiful and unique dry film appearance that is reminiscent of Light Molding Paste, but with the glitter of coarse iridescent pearl particles across the surface. It is also similar in appearance to the Satin Pearl from the last batch of experimental products. The wet consistency is like a thinner Light Molding Paste. This medium creates gorgeous iridescent colors when mixed with Fluid or Heavy Body Colors. The Workable Iridescent Medium (Long Open), with a consistency similar to Soft Gel, looks like a softer version of our Iridescent Pearl. It's not as unique visually, as the Workable Iridescent Medium, and the long open time is its special property.

The two non-iridescent Workable Mediums are more translucent than the iridescent ones, with the Workable Medium (Long Open) being the most translucent of the four, and appearing very similar to Talc Medium, but with more tooth. The Workable Medium looks similar to Coarse Molding Paste, but a bit more opaque with a smoother surface and smaller particles.

WORKABLE PROPERTIES

All four of these Workable Mediums will have good re-solubility using water and a soft abrading tool within 24 hours of application. After that, there is some significant variability from medium to medium. The short open mediums dry to the touch in approximately 15 to 45 minutes, depending on the thickness and environmental conditions, and the long open mediums can take all day to dry to the touch. An advantage of the short open mediums is the



Fluid Acrylics with Workable Medium and Iridescent Workable Medium by Scott Bennett.

potential for multiple layering within a relatively short period of time. The advantage with the long open mediums involves any technique where extended working time is needed.

On the second day of drying, all but the Workable Medium were relatively easy to re-solubilize with water and soft abrading. The Workable Medium required more vigorous action to break it up. Workable Medium (Long Open) was soft and gummy on the second day and in thicker areas, could be scored very easily as if it was a very thick, wet material. By the third day, there were more significant changes in the re-solubility of all the mediums, with most being harder to re-solubilize. The two long open mediums can both be re-solubilized after a week with water and vigorous scrubbing. The two short open types, however, vary greatly. After a week of drying, the Workable Iridescent Medium could just as easily be re-solubilized using similar techniques as was used with the long open mediums. The re-solubility of the Workable Medium dropped off sharply after three days, and was essentially non-existent at four days. However, it is very easy to remove by carving and scraping into the surface.

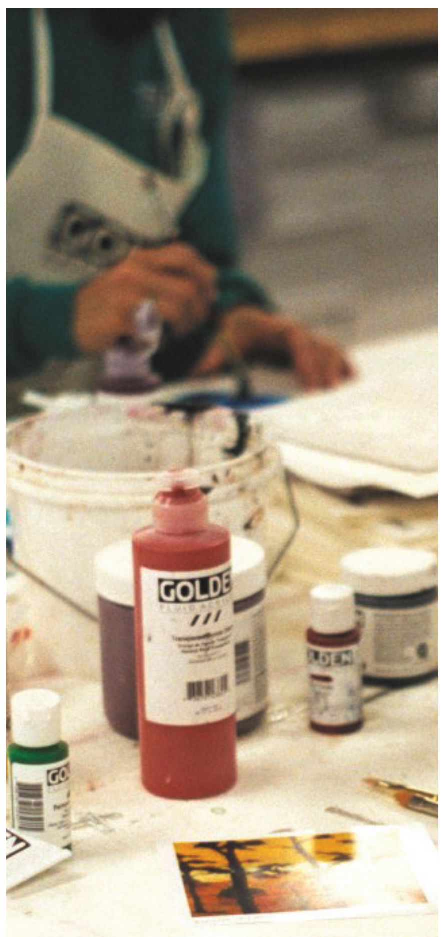
For techniques on using these products visit the Golden Artist Colors Web site at www.goldenpaints.com justpaint/jpindex.php.

Working Artists Program
10 Years of Sharing
Continued from page 6

gives retail staff the opportunity to gain an in-depth understanding of the GOLDEN product line and of acrylics in general. Through the training done by Working Artists, retail staff is able to give customers the most accurate information possible regarding modern materials. This Program imparts confidence in staff's ability to address the concerns and interests of one of the most creative communities in the world – artists.

As a manufacturer that supplies these retailers, we believe in supporting those partners that help to create and support the community of artists, wherever and however they exist. In order for all of us to thrive in this creative community, we need to support and give back to one another for mutual success.

"Working with our Retailer Community has been a very positive experience," said Patti Brady.



One-on-one interaction and product experimentation in Working Artists Program Workshops provide the artist community with real-life experience.

"They are embracing the work we're doing in their stores and are extremely appreciative of the time and planning that goes into each session in order to ensure its success. They keep asking us back to their stores, so that's a great feeling!"

Two newcomers to the Program are also excited about what they've experienced in the Program already. "I am very encouraged by the positive experiences I have had thus far as a GOLDEN Working Artist," said Arizona Artist Adriana Yadira Gallego. "The rush of absorbing, processing and sharing so much knowledge has already enriched my development as an artist and educator."

"My first thought, at least the one that is foremost in my mind is the historical perspective that comes from an association with Golden Artist Colors," said Florida Artist, K.D. Tobin. "It feels like a reach back through the history of modern art and the ability to converse, if only metaphorically, with the likes of Frankenthaler, Louis, and Lichtenstein. The connection between GOLDEN and Bocour and the modern masters of the 30s, 40s, 50s and 60s is more than a little bit thrilling, and any connection to that history, no matter how fleeting can quicken the pulse. The information provided to us, the Working Artists, and by extension to lecture/demo and workshop participants is beyond comprehensive. The phase one training with Patti in Greenville only confirmed how dynamic the Program actually is and I am very excited to be working with her."

When asked where she thought the Program would be in another 10 years, Patti said, "We are hoping to grow the Program even more. What we've accomplished thus far is truly amazing and couldn't have been achieved without the continued support of the artist and Retailer communities. Even more amazing are the incredible artists who have decided to participate in this remarkable bout of creativity!"

Working Artists Program Classes and Lecture Demonstrations are available for arts organizations, universities and colleges, clubs, retail stores, and private groups. To learn more about the Working Artists Program and the artists teaching the workshops, go to the GOLDEN Web site, www.goldenpaints.com, browse your cursor over "Artists" in the main menu and click on "Working Artist Program/Workshops".

Art Materials Information and Education Network
Continued from page 7

were often inaccurate or already outdated by the time of publication. With the advent of the Internet, information about materials can be circulated but there is no impartial mechanism for verification of posted statements from artists or manufacturers. Other vital information is published in venues not readily available or known to artists, such as the journals of the American Institute of Conservation (Washington, D.C.) and the International Institute for Conservation (London, UK).

AMIEN is a non-profit organization under the auspices of the Intermuseum Conservation Association's 501 (c)(3) structure. The ICA is the nation's oldest regional art conservation/preservation services provider. Founded in 1952 at Oberlin, Ohio, the ICA has made significant contributions in conservation and preservation education and research (www.ica-artconservation.org). ICA Association membership has included the region's largest collecting institutions. Its current membership is comprised of more than 44 museums and historical societies, and it provides conservation consultation and services to numerous other clients. Its staff of over 20 full-time and adjunct conservators, technicians, and support staff are capable of treating the entire gamut of works of art: works on paper, books, paintings, sculpture, furniture, textiles, and objects. Now located in a National Historic Register building near downtown Cleveland, Ohio, the ICA has significantly increased its visibility and its accessibility.

AMIEN is a non-profit part of the *Intermuseum Conservation Association*. Contact AMIEN at 2915 Detroit Avenue, Cleveland, OH, 44113, or on the internet at www.amien.org.

INSIDE

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Issue 16 **January 2007**

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Publisher: Golden Artist Colors, Inc.
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